

CLAIMS

1. A method of determining at least one cue of vertical position of an aircraft (A) during landing thereof on a landing strip (2), in the presence of a lateral alignment beam (3, 3B) which is emitted from the ground and which gives an indication regarding the lateral alignment with respect to the landing strip (2),
wherein:
 - a) said lateral alignment beam (3, 3B) is detected on the aircraft (A);
 - b) on the basis of cues relating to said lateral alignment beam (3, 3B) thus detected and of predetermined cues, an axis of approach of the aircraft (A) is determined;
 - c) the actual position of the aircraft (A) is determined;
 - d) a preset position of the aircraft (A) is determined, which corresponds to the position that the aircraft (A) would have if it were on said approach axis; and
 - e) on the basis of said actual position and of said preset position of the aircraft (A), the vertical deviation of the aircraft (A), which represents said vertical position cue, is computed.
2. The method as claimed in claim 1, wherein, in step b), to determine said approach axis:
 - α) a set of first axes all passing through one and the same predetermined point situated on the ground at least in proximity to said landing strip (2) and all exhibiting one and the same predetermined slope is formed; and
 - β) a first axis of said set of first axes, whose projection onto a horizontal plane is parallel to the projection onto this horizontal plane of said lateral alignment beam (3, 3B) detected, is chosen as approach axis.

3. The method as claimed in claim 1,
wherein, in step c), the actual position of the
aircraft (A) is determined on the basis of values of
5 longitude, of latitude and of altitude of the aircraft
(A).

4. The method as claimed in claim 3,
wherein the value of altitude of the aircraft (A) is
10 obtained with the aid of at least one measurement
carried out by at least one barometric probe (19).

5. The method as claimed in claim 3,
wherein the altitude value which is measured is
15 corrected, as a function of the temperature on the
ground.

6. The method as claimed in claim 5,
wherein the altitude value A_m measured is corrected
20 with the aid of the following expression, to obtain a
corrected altitude value A_c :

$$A_c = (A_m - A_p) \cdot (T_1 / T_2) + A_p$$

in which:

- A_p represents the altitude of the landing strip
25 (2);
- T_1 is the temperature on the ground; and
- T_2 is a predetermined temperature value.

7. The method as claimed in claim 5,
30 wherein the altitude value is corrected only if the
temperature on the ground is less than a predetermined
temperature value.

8. The method as claimed in claim 3,
35 wherein the altitude value measured is corrected in
such a way as to obtain a corrected altitude value QNH
which is referenced with respect to the level (28) of
the sea (29).

9. The method as claimed in claim 8,
wherein, when the measured altitude value QFE is
referenced with respect to the landing strip (2), it is
corrected, with the aid of the following expression, to
5 obtain the corrected altitude value QNH:
$$QNH = QFE + A_p,$$

in which A_p represents the altitude of the landing
strip (2).
10. The method as claimed in claim 8,
wherein, when the measured altitude value is a standard
altitude STD, it is corrected, with the aid of the
following expression, to obtain the corrected altitude
value QNH:
15 $QNH = STD + \Delta$ with $\Delta = QNH_p - \beta$,
 QNH_p being a value dependent on the atmospheric
pressure at the level of the landing strip (2) and β
being a predetermined value.
- 20 11. A method of guiding an aircraft (A) during landing
thereof on a landing strip (2), in the presence of a
lateral alignment beam (3, 3B) which is emitted from
the ground and which gives an indication regarding the
lateral alignment with respect to the landing strip
25 (2),
wherein the following series of successive operations
is carried out repetitively up to landing:
A/ the method specified under claim 1 is implemented
to determine the vertical deviation of the
30 aircraft (A);
B/ the lateral deviation of the aircraft (A) with
respect to said lateral alignment beam (3, 3B)
detected is determined; and
C/ the aircraft (A) is guided in such a way as to
35 cancel out said vertical and lateral deviations.
12. A device for determining at least one cue of
vertical position of an aircraft (A) during landing
thereof on a landing strip (2), in the presence of a

lateral alignment beam (3, 3B) which is emitted from the ground and which gives an indication regarding the lateral alignment with respect to the landing strip (2),

5 which comprises:

- a means of detection (7) for detecting said lateral alignment beam (3, 3B) on the aircraft (A);
- a database (8) comprising cues relating to landing
10 on said landing strip (2);
- a first means (9) for determining an axis of approach of the aircraft (A), on the basis of cues relating to said lateral alignment beam (3, 3B) that are received from said means of detection
15 (7), and cues received from said database (8);
- a second means (14) for determining the actual position of the aircraft (A);
- a third means (12) for determining a preset position of the aircraft (A), which corresponds to
20 the position that the aircraft (A) would have if it were on said approach axis; and
- a fourth means (15) for computing, on the basis of said actual position and of said preset position of the aircraft (A), the vertical deviation of the
25 aircraft (A), representing said vertical position cue.

13. The device as claimed in claim 12,
wherein said first and second means (9, 20) form part
30 of one and the same computation unit (UC1).

14. The device as claimed in claim 12,
wherein said third and fourth means (12, 15) form part
of one and the same computation unit (UC2).

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15. An aircraft,
which comprises a device able to implement the method specified under claim 1.